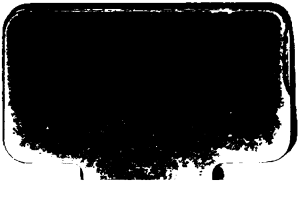
A WINTER RAMBLE IN THE COUNTRY



"Holy Well," Trelill, near Helston, Cornwall.

A

WINTER RAMBLE

IN

The Country.

BY THE

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"O ye frost and cold, bless ye the Lord: praise Him and magnify Him for ever."—*Song of the Three Children.*

"It may be said of fire, hail and snow, trees and other vegetables, beasts, birds, insects, and all animals, when they are commanded to praise God, which they cannot do by themselves, that man is commanded to consider them particularly; to observe, and take notice of their curious structure, ends and uses, and give God the praise of His wisdom, and other attributes therein manifested."—*Ray's Wisdom of God in Creation.*

A

WINTER RAMBLE.

All our wanderings hitherto, over field, heath, or mountain, have been undertaken at seasons when vegetation was either bursting into vigorous life, flourishing in the full leafiness of summer, or but showing symptoms of approaching decay. Winter is now set in: every tree is bare of leaves; the heath is bleak and desolate; the mountain has become a pyramid of snow; the fields which, a few months back, were waving with corn, are now but a waste stubble, and the bog which we traversed with great difficulty even in

June, in quest of the sundew[1] and cotton-grass,[2] is become a swampy lake, dotted here and there with islands of Dutch-myrtle[3] and stunted willows. Now, although the appearance of nature is every where altered, yet we must not on that account suppose that there is less of wisdom and design in the frost that nips the fully expanded leaf, than there was in the sun-beam which cherished it into life. He who "walketh on the wings of the wind," sends that wind to fulfil His own word: frost and snow, and the gloom of winter, are His messengers: "He commanded, and they were created" to execute His will upon earth. We, unfortunately, are in the habit of associating ideas of discomfort with these phenomena; we congratulate ourselves on the power we possess of *resisting* the cold by violent exercise; but

[1] Drosera. [2] Eriophorum. [3] Myrica Gale.

we are not in the habit of contemplating a severe frost as an act of God's mercy, and, on that account, a blessing thankfully to be received. We are inclined to *complain* of what is termed "a hard winter," as if it were brought about by some evil agency instead of the Author of all Good; we indeed think that we are called on, and with reason too, to exert ourselves beyond our means in relieving our poorer neighbours, but not without sundry misgivings (unuttered perhaps, yet suggestive of complaints) whether it would not have been better for all if we had been blessed with a milder season. Many among us, I fear, when they hear the wintry storm howl round their dwelling, make the shutters fast, and contract the circle round their blazing fires; and while they thank God with their mouths, that he has blessed them with a comfortable home,

forget to meditate in their hearts on Him who raised the tempest, and do not regard the visitation as an urgent call conveyed to them through the agency of more than one of the senses, to perform the works of charity towards their neighbours.

"Frost and snow, stormy wind, fulfilling His word."[1] This single passage, from an inspired pen, ought sufficiently to convince us that during the bitterest winter, as much as during the most fruitful autumn, we are in the hand of God, and that indications of Creative power and love may be discovered by those who search for them faithfully even in such seemingly unproductive objects of contemplation.

Imbued with this spirit, therefore, we will sally forth for a "Winter Ramble," and we

[1] Psalm cxlviii. 8.

shall not fail to discover that He "Who compasseth our path," "crowneth the year with His goodness," both when "He covereth over the valleys with corn," and when "He scattereth his ice like morsels."

The present winter, (1846-7,) threatens to be an unusually severe one; and indeed, if we place any confidence in weather-prophets, such we ought to expect. They tell us that the average degree of heat in every year, estimated by the height at which the thermometer stands daily, scarcely varies at all; that is to say, if the summer be unusually warm or protracted, the winter will be the reverse; on the other hand, if the summer be a chilly one, the winter will, in all probability, be mild. These predictions, however, though they may be founded in a long and accurate series of observations, are never so certain that we can calculate with

safety on what a day may bring forth. God has ordained the natural course of the seasons to be as it were a type of His dealings with men in Divine things. "He changeth the times and the seasons"[1] of the natural year, that we may daily be impressed with the knowledge, that with the heavenly times and seasons it is the same—them equally "The Father hath put in His own power."[2] Nevertheless, we cannot err in calling to our aid human reason and science, His especial gifts, provided that we consider the results to which they may lead us as strictly subservient to His will. With this limitation, we may therefore calculate on the probability of a severe winter, and prepare to meet it with such prudence as God has given to us.

Last summer was one of the warmest and

[1] Daniel ii. 21. [2] Acts i. 7.

longest that we have had for many years: the winter has set in unusually early, and with remarkable severity. From the 11th to the 18th of December, the ground, even in this generally mild district, within ten miles of the most southerly point of England, was deeply covered with snow. But bright days come in the gloomiest winters from Him whose mercies beam on us in our deepest afflictions, unlooked for, and, on that account, all the more clearly indicating their Author. Just such a day is this, that we have chosen for our ramble. Until within the last forty-eight hours, we have had a succession of cheerless days, without any alternation of fine weather. The cold, however, was not excessive, and we might almost have fancied that winter was at an end. As the snow rapidly disappeared, and field after field threw off its white mantle, we put less and less

faith in the predictions of the weather-prophets. But the wind suddenly shifted round to the north-east: it is not long since it blew over the frozen plains of Siberia: the streams formed by the thawing snow, have been stiffened into ice: our fingers tingled this morning as we dipped them in water: it is already too cold to sit by the fire: we must not stay shivering here, but away and kindle a fire within us by exercise.

On first stepping out into the keen air in this nipping weather, one feels little inclination to stop and examine the minute beauties that lie so profusely around. If we saunter at all to-day, it must not be until the whole body is in a glow with exercise, and even then, we must pause only for a few minutes together. But no matter; we shall, while we are walking, see much that will interest us, and we can

converse first about those things which do not require a close examination.

The rays of the sun, feeble as they are, have already thawed much of the ice on one side of the road: but on this side, the ground still continues hard, and here, no doubt, it is still freezing. The new bank on our right which looks towards the south, already acquaints us with some of the effects of frost. Small particles of earth and stone have been loosened, and have trickled down into the road, where they stand in little heaps. This is to be attributed to the property which water possesses of increasing in bulk while it is in the act of being converted into ice. The recent snow, as it thawed, sank into the soil, and filled it with as much moisture as it could hold. While it was in this wet state, the frost set in; all the particles of water within a few inches of the

surface were changed into ice, and as they occupied more room in their frozen than in their fluid state, they removed the particles of earth to a distance from each other, but nevertheless so cemented them together, that these particles of earth could not fall as long as the frost continued. But as soon as the thaw commenced, the icy particles were changed back again into fluid: they have now no longer the power of binding the soil together; consequently, the soil, thrust out so far from the bank as to have no support, falls, bringing with it all the loose bits of earth and stone that it touches in the way. But not only is earth thus disturbed by the agency of freezing water; the hardest rocks, if only their substance be porous to a very slight degree, are liable to have their surfaces wasted away at every return of winter, and are thus compelled to make additions to

the surrounding soil: In mountainous countries, these particles are washed away by the streams formed from the thawing snow, and under the name of *alluvium* constitute the basis of the soil in the valleys.

The same agency contributes not a little to prepare arable land for the reception and growth of the various crops which it is intended to receive. We will examine by and by some clods of earth in the ploughed field, which, before the frost set in, was composed apparently of solid lumps of clay. We shall find that the farmer acted quite rightly in leaving it all the winter in as rugged a state as possible. The frost will have penetrated every clod, and so thoroughly separated the particles of which it is composed, that it will crumble into fine loam at the slightest touch. Shortly the ground will begin to dry up, and then the

harrow will easily reduce it to a state fit for the reception of seed. And this is not all. The roots of the rising crop will have nothing to obstruct their creeping about in quest of nourishment; and above all, the air has had innumerable passages made for it to enter, and, by combining with the manure and other ingredients of the soil, to prepare nourishment for the hungry plants.[1] We little think, as we consume our daily bread, of the infinite care that our Heavenly Father must have expended —the innumerable operations of His providence, every one of which is beyond our control—before a single grain of corn could be brought to maturity. The effects of some He

[1] Farmers are well acquainted with the beneficial effects of frost on the soil, and frequently lay out their arable land in ridges, in order that as large a surface as possible may be exposed to its influence.

has permitted us to trace to their causes; but when we reflect how many more there may be of the existence of which we are ignorant, we cannot but be lost in admiration.

You ask me, "How comes it that in the ruts which traverse the road, the thin sheets of ice do not touch the ground at the bottom, but are stretched from ridge to ridge, so as to form interrupted hollow tubes?" I answer, in obedience to a law of the God of Nature, by the suspension of which the whole earth would almost instantaneously become a frozen desert. To make myself clearly understood, I must explain as simply and in as few words as possible, the law to which I allude. It is the nature of all bodies to expand (or increase in bulk) when heated, and to contract (or decrease in bulk) as they become cold. Consequently, any given quantity of water, when heated, a cubic inch

for instance, contains fewer particles than a cubic inch of cold water; in other words, it is lighter, and immediately rises to the surface, while the cold water descends to take its place. Now, if the coldest particles of water in a pond went on sinking to the bottom until they reached the freezing point, it is clear that ice would be formed first at the bottom of the pond, and would rapidly extend upwards, until the whole was converted into a frozen mass. The same thing would occur in lakes, rivers, and even in the sea: aquatic animals would perish, and land animals would not be able to withstand the cold which the wind would bring with it from whatever quarter it blew. Furthermore, were this once to take place,—if a lake of but moderate depth were once frozen into a solid mass of ice,—such it must continue; there is no power in Nature to restore

it to its fluid state. A warm sun would thaw the surface indeed, but the heated particles of water would not sink to communicate their heat to the ice beneath; being lightest, they would remain at the surface; and the power which water possesses of conducting heat, that is, of transmitting it from particle to particle, is so slight, that winter would return and repeat as much of the process as could be repeated before any appreciable effect could be produced. To prevent, it would appear, such a catastrophe as this, water (and of all known substances water alone) contracts only until it is cooled down to a certain fixed temperature.[1] Immediately that it is brought down to this point it begins to expand, it becomes lighter, and rises to the surface. As soon as the whole

[1] Forty degrees of Fahrenheit; that is eight degrees above the freezing point.

mass has reached this temperature, the surface only is converted into ice, which extends more or less deeply in proportion to the intensity and duration of the frost. Thus, you see, though Nature has not the power to thaw a lake of solid ice, the God of Nature has, in His wisdom, ordained that this phenomenon can never be presented.[1] And now you will be able to understand how it is that the thin sheets of ice are thrown across from the ridges of the ruts, instead of being deposited at the bottom. The water, after it had sunk to the temperature mentioned above,

[1] The glaciers, or frozen seas, of the Alps would seem to be an exception. In reality, however, they confirm the above theory, being formed by successive deposits of snow, the *surface* of which thaws in summer, and is reconverted into ice in winter. The rays of the sun never penetrate deep enough to thaw the whole mass. The result would be precisely similar if one of our lakes were once frozen throughout.

began to expand and grow lighter. It immediately ascended through the porous mud with which it was in contact, and was converted into ice; other cold particles followed, and were added to the frozen plate; and the same process will continue as long as the frost lasts, or any water remains.

And now that we have arrived at a spot which the rays of the sun have not yet reached, and where no thaw has taken place, we will stop and examine the crystals of hoar-frost, which seems to be more abundant just here than it is anywhere else. We have discovered that we possess the power of kindling heat within us independently of fire and fuel, and we have, I think, accumulated enough to last us for the few minutes that it will be necessary for us to remain here. Dew, you are aware, is composed of small drops of water deposited

by the atmosphere on any substance that it meets with colder than itself. This may easily be proved by bringing into a warm room a bottle filled with very cold water. The polished glass is immediately dimmed by a film of dew, which increases until it runs down the sides in streams. If it be wiped away, a new deposit will take place, until the water in the bottle is raised to the same temperature as the air of the room. Hoar-frost is frozen dew, and is produced in the clear nights of winter, just as dew is produced in clear summer nights. We might, therefore, expect to find it most abundant on the coldest substances, and accordingly, these patches of frozen snow have their surface thickly coated over with crystals. The bars of thin ice which stretch across from the walls of the ruts are fringed in like manner. The edges of the ice, too, which was broken yester-

day, do not now exhibit a smooth fracture, but are roughened by the same agency. Blades of grass, which present a large radiating surface in proportion to their bulk,

> ——— "now shine
> Conspicuous, and in bright apparel clad
> Are fledg'd with icy feathers."

These withered oak-leaves, which must have been saturated with wet during the late thaw, are frozen together in plates. Wherever they have fallen with the under side uppermost, the veins are most distinctly marked by lines of minute crystals. If you handle them, you will find them quite rigid, the frost has penetrated their whole substance. Now, pass your hand over a tuft of grass which is fringed with hoar frost, even more thickly than the oak leaves. It falls off or melts under the touch; but the blades of

growing grass have all escaped, they are as flexible as they were before the frost set in. Here and there the tips of the leaves are nipped and turned dark-green, but, generally, their substance has not been frozen. Here then we have another instance in which Frost and Snow call on us to praise God. It is His will that the dead leaves should not long retain their present form. Ever since they fell from the tree, minute fungi have been eating into their substance, and making a way for the admission of water; and now the frost is performing its work, in order that they may be reconverted into soil. But the natural juices of the grass are required for other uses; they are part of a living plant which was created for another object, and are therefore endowed by their Creator with the power of resisting the action

of frost. In what this power consists we do not know. Life, whether animal or vegetable, is, for some wise purpose, shrouded in an impenetrable mystery. From what we know of the operations of nature, we should have supposed that living plants, which must lose a greater or less portion of heat during the evaporation essential to their growth, would be reduced to a lower temperature than dead organic matter: and no doubt this law does operate to a certain extent. Old dried stems of grass may frequently be seen quite free from hoar-frost, while living grass is thickly coated, proving that the *surface* of the latter has been reduced to a lower temperature than the others; yet the inner juices do not freeze. Theory and the result of experiments combine to prove that living vegetables generate heat, but

the method is unknown. The fact is sufficiently clear, that frost may decorate the outside of the growing leaf with its brilliant spangles of crystal, but is not permitted to congeal the living juices. "Therefore, if God so clothe the grass of the field, how much more shall he clothe you, O ye of little faith!"

You must not infer from what I have said, that all vegetables equally possess the power of resisting cold. Not only do plants indigenous to warm climates perish down to the very fibres of their roots when barely touched by frost; but many of our native herbs and shrubs are sometimes cut back to such a degree as not to recover from the effects during the whole of the ensuing season. I have seen a bed of nettles blackened by a frosty east-wind. Furze, an ever-

green shrub, however robust and stoutly armed it may appear, finds in a severe frost an enemy that not even its formidable array of lances can keep off. For all this, it

FURZE BLOSSOMS, NIPPED BY FROST.

shows a bold front, giving with its few golden blossoms, in the very depth of winter,

great promise of the gorgeous attire it means to assume in spring. But, alas! all its expanded flowers are frost-bitten and turning white, and many of its young buds are drying up and withering; even its formidable prickles are, on the younger shoots, unable to withstand the cold. Except in very sheltered situations, we shall next spring look in vain for its perfumed sheet of gold.

Other plants, some of the mosses for instance, will suffer themselves to be frozen throughout into a hard mass without being injured. The most remarkable with which I am acquainted of this class, is the "Slender Bog-moss."[1] This species, like the rest of the genus, has very peculiar, whitish green, foliage, but may be distinguished from other

[1] Sphagnum acutifolium: see, "The Bog," page 239 of "Botanical Rambles;" square edition.

bog-mosses by being tinged more or less deeply with rose-colour, especially in the

SLENDER BOG-MOSS.

winter months. From its place of growth, and the property which it possesses, of readily absorbing moisture, it is, at this season, a

mass of watery sponge, which a hard frost converts into a block of ice, so solid that a slice may be cut off, no thicker than a biscuit, consisting entirely of the extremities of shoots. Yet when a thaw sets in, it resumes its original condition, not in the least degree affected by the process to which it has been subjected.

This remarkable power of withstanding the usually destructive action of frost does not belong exclusively to vegetables; for some of the cold-blooded animals, as they are called, such as serpents and fishes, will bear being frozen till they are quite rigid, and yet will recover animation when removed to a warmer temperature. Insects, for the most part, at the approach of autumn, select for themselves secure winter-quarters, under moss and stones, and behind the rough bark of trees, or bury

themselves deep enough in the ground to be beyond the influence of frost. Here they remain sunk in a deep sleep, until spring; during which period all the vital functions are either suspended or greatly impaired. Their state may be compared to the inactive condition of the trunks of trees in winter. All outward indications of life are wanting; but life itself remains in its full perfection, having taken refuge, as it were, in some invisible fortress, and the return of genial weather calls it back in both instances into full vigour. Many insects pass the winter stage of their existence in the egg state; a parallel to which presents itself either in the buds of trees or the seeds of plants generally. Every bud on a tree may be considered as the germ of a new ndividual; for if a tree be cut back, so that only a single bud be left, that one will appro-

priate to its own use the whole of the nourishment conveyed from the roots, and fulfil all the conditions of the stems which have been removed; or, any bud on a tree may be removed from the parent stock, and so treated that it shall assume an independent existence, and resemble in every respect the tree from which it was taken. Buds are formed during summer or autumn, and are protected from severe cold by an apparatus so wonderfully perfect, that nothing in nature can be discovered calculated to render it more complete. Silk, wool, gum, resin, whatever science has declared to be best adapted for keeping out cold,—or, to speak more correctly, for keeping in heat,—has been called into requisition. Accordingly, the tender germ remains unaffected, though coated externally with ice. If insects were endued with reason, we might be inclined

to suppose that some of them had seen and admired this beautiful arrangement, and had resolved to adopt it for the preservation of their offspring. We find, however, that certain *species* of insects have certain habits from which no single *individual* departs, and we therefore conclude, that the law by which each acts is in accordance with an instinct implanted in it, which it is as much compelled to follow, as the Beech-tree is compelled to send forth buds of a particular shape, and protected by a definite arrangement of scales and silk: we do not, therefore, admire so much the ingenuity of the insect, as the wisdom of its Creator. It is instinct, then, which teaches a certain moth to alight on a twig of a particular kind of tree, on which she does not herself feed, but which is destined to supply her offspring with food. She knows not that

her eggs will not be hatched until the tree is bared of its foliage.—What can be known of the effects of winter on vegetation by an insect who was only born in the preceding spring? However, though the future caterpillar is destined to feed on *leaves*, these the moth scrupulously avoids, and deposits her eggs on the branches, to which they adhere by their natural viscidity. The egg-shell is remarkably thin and tender, consequently incapable of resisting the slightest frost; the Almighty Power that governs the movements of the moth, directs her, therefore, to glue her eggs together in a hard mass, and to cover them externally with a warm non-conducting coat of hairs plucked from her own body, equally impervious to cold and wet. Her office having ceased, she dies. As to what will become of her embryo offspring, she knows no more

than the trunk of the tree knows why its buds are wrapped up in their impenetrable mantle. That the act which she has just completed did not originate with herself, is proved by the fact, that their perfect development is as fully ensured as if she had taken measures for the preservation of her own life during the approaching winter, and had, on the arrival of spring, become the mother of perfect insects.

Had the eggs been deposited on the leaves of the tree, they would have been swept away, together with their nest, by the first nipping frosts of autumn, and would either have perished in their embryo state, or the caterpillars would have been hatched in the spring, far away from their natural food, and have died of starvation. But attached as they are to the sturdy trunk or flexible branch, they cannot be dislodged by the most violent tempest, and no severity

of cold can penetrate their artfully woven wrappings. The same atmospheric influences which bid the leaves expand, summon them too into life. Whatever accelerates or retards the bursting of the bud, acts with the same effect on the egg of the insect. Both commence the active stage of their existence together.

The history of this insect may serve to teach us a vitally important and practical lesson; this, namely: that all our actions should be undertaken with a firm conviction that whatever work it is our duty to perform, is assigned to us by our heavenly Father, the issue being in His hands. And this applies not only to important enterprises, but to the ordinary occupations of life; events which are seemingly of little consequence to ourselves. The poor perishing moth, the very emblem of frailty, was unconsciously glorifying God by the last

act of her life; and that, too, an act which, far from promoting her own welfare, tended to hasten her destruction. And we may furthe learn, how necessary it was for our Blessed Saviour to direct our attention to the objects presented by the animated world around us for how much more important is the most insignificant of our actions than the work on which this mean insect was commanded to bestow all her care and ingenuity! Yet, how prone are we to listen to the dictates of reason rather than of God's Holy Spirit: making our own interest the sole motive of our actions, instead of the glory of Him, who both set the task, and appointed its object!

Some insects which do not retire beyond the reach of frost during winter, appear to have the power of resisting its action. The caterpillars of the gooseberry-moth, for instance,

have been known to pass the winter protected only by the projecting rim of a garden-pot; yet they were not in the least affected by frost. In the polar regions, mosquitoes abound at a season when no symptom of vegetation is to be discovered, and are so troublesome, that the inhabitants are obliged to protect their bodies from the attacks of these insects by rubbing themselves over with grease. In our own country, winter-midges,[1] heedless of frost, sally forth from their lurking places in calm weather, even though the ground be covered with snow:—

> "A thousand ways
> Upward and downward thwarting, and convolved,
> The quivering nations sport."

What may be the purport of their gambols, or what peculiar power they may possess of

[1] Trichocera hyemalis.

resisting the cold, we do not know. They proclaim to us, however, plainly enough, that God does not neglect His creatures, but enables them to fulfil His will, though all else in nature appear to us desponding and inactive. While these tiny insects find in this cheerless season the summer of their year, others submit to be frozen throughout their whole substance, until they have become as brittle as glass, and will, nevertheless, produce perfect butterflies. It is very wonderful, that the entire stagnation of the fluids which must take place, does not in these cases destroy life; but it is yet more wonderful, that the expansion of the same fluids, in order that they may be converted into ice, does not rupture the vessels in which they are contained. Human science has discovered no material sufficiently strong that a close vessel may be made of

it capable of resisting the expansive force of freezing water;[1] yet the thin membrane which composes the cells of the moss mentioned above, as well as that of the caterpillar, is so constructed that it may enclose a mass of ice, and yet remain uninjured.

But now we will enter the wood where, last spring, we gathered such lovely wind-flowers[2] tinged with pink and blue. They have not yet ventured to show even the tips of their leaves above the ground. Their roots, however, are well protected from the frost, not-

[1] Some years since, it was observed one cold winter's morning in Devonport dock-yard, that a large cannon, the muzzle of which had been buried in the ground, had cracked during the preceding night; and, on examination, it was found that a small quantity of water, which had accidentally lodged in the chamber of the gun before it was sunk in the ground, had been converted into ice, and cracked the iron barrel, though the latter was several inches thick.

[2] Anemone nemorosa.

withstanding the looseness of the vegetable mould which covers them. The snow, too, lingers here, and greatly befriends them; for snow, being a bad conductor of heat, keeps in the natural warmth of the soil as effectually as woollen clothing keeps in the warmth of our bodies,

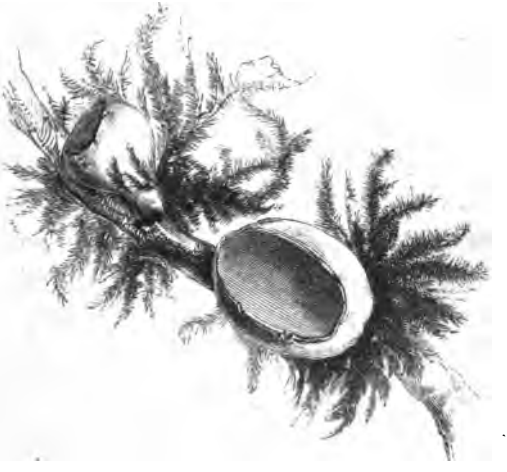
> "And the green
> And tender blade, that feared the chilling blast,
> Escapes unhurt beneath so warm a veil."
>
> *Cowper.*

We can account in two ways for the fact that frost and snow are often found in woods after they have quitted the open country. In the first place, the ground is shaded from the rays of the sun by the overhanging branches; and secondly, its temperature is much reduced by the heat being conducted up the trunks of the trees, and its radiation from the large surface presented by branches and twigs. Thus,

while a sandy plain radiates a quantity of heat only proportionate to its surface, a wood radiates a quantity proportionate to the combined surface of the ground and of the branches, diminished only by the small quantity radiated back to the earth from the trees.[1] The ground, close to the trunks of the trees, you will observe, is quite free from snow; not because none has fallen there, but because the trees have been radiating their heat, whether received from the direct rays of the sun or conducted from the earth. The ground on the south side of the trees, that, namely, which is opposite to the sun, is clearest. That the thaw is not occasioned by the radiation of vegetable heat is proved by the fact that dead stems produce the same effect.

[1] In Canada, the snow remains on the ground much longer in the woods, than in the cleared country.

We will go a little out of our way to search for some very beautiful fungi,[1] which, if the



PEZIZA COCCINEA.

ground be not entirely hid from view, we shall probably find now, and during early

[1] Peziza coccinea.

spring, on decaying branches of hazel. Here they are, and in abundance! Who would suppose that anything so delicate in substance, and so brilliant in colouring, could be produced from these unsightly rotten sticks? Their shape, too, is as elegant as their colour is dazzling. In their early stage they are white, club-shaped columns, presenting a most unpresuming appearance: soon the summit opens and exposes an intensely bright crimson surface, which expands at first into a deep cup, and finally into a spreading bowl, as large over as a crown piece. When in this state, if they are touched while the sun is shining warmly, they will sometimes send up a fine jet of smoke, at least so it is in appearance; but, so rapid is this process, that before one has had time to discover from what part of the surface the puff proceeded, it has vanished,

and not a pore as large even as the point of a needle can be detected. The particles of which this apparent smoke is composed are, undoubtedly, seeds; but how infinitely minute, and yet how incalculably numerous, must they be, that they should vanish from the sight more rapidly even than smoke, and yet exist in such numbers as to be visible at all!

Last winter I found, on an exposed turfy bank not far from this place, another fungus, which was in structure yet more curious.[1] I was returning home from an excursion which I had undertaken in quest of mosses, and though I was walking very quickly to keep off the cold, my eye was suddenly arrested by a singular looking hole in the ground, which, from its ragged edge, was evidently of recent formation. Naturalists always bear in mind

[1] Geaster hygrometricus.

that the unpromising exterior of an oyster may hide a pearl. To see, and to stop and examine, were, therefore, one work. The hole was about two inches in diameter, and evidently made by something beneath, for the turf was slightly raised all round. It was not quite circular, for a root of wild thyme passed across the centre, and tied down, as it were,

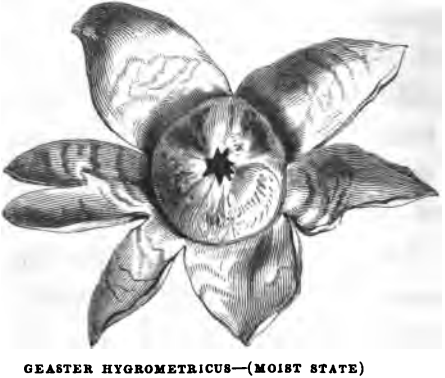
GEASTER HYGROMETRICUS.

the turf on two opposite sides. When this was severed, the confined sides were forced

back, and there appeared at the bottom of the hole a fungus, of which the annexed wood-cut is an accurate representation.

The history of its growth appears to be this: it attains its full size beneath the turf, when it is of the shape of an orange, and rather more than an inch in diameter; in colour, brown; internally composed of a spongy substance, which, when mature, is converted into brown dust like that of the common puff-ball. It has two coatings; the inner, thin and easily torn; the outer, thick and tough. In the early stages of its growth both of these appear to have been united; but when the fungus was prepared to shed its seed, the outer covering split into a number of rays, separating themselves from the inner case except at the base; and, being elastic, thrusting back the earth which covered them, so as to expose the whole

plant to the air and light. In this particular instance, its elevation above the ground appears to have been retarded by the root of thyme before mentioned. I did not, however, leave it to complete its labours in its native soil, but carried it home, nest and all. In a few



GEASTER HYGROMETRICUS—(MOIST STATE)

days it had become dry, and the rays had all closed over the inner case. On being im-

mersed in water, the rays again expanded, but the hard points had pierced the inner case, and formed the rugged orifice (represented in the second wood-cut) necessary for the escape of the seed. It still retains its property of expanding on the application of moisture, and closes again when dry as at first. So perfect is the mechanical contrivance by which this strange vegetable performs the various stages of its life, that it seems to have almost a will of its own. Growing fungi, so soft that they can be crushed into a paste between the finger and thumb, have been known to lift out of the ground flag-stones which a strong man could not move without a lever. It is beyond human knowledge to explain how this is effected: we can, therefore, only behold and wonder. But in the case before us, the operation is conducted by means of mechanism,

which, though perfect, is simple and easy of apprehension. The ground is broken through, the inner case protected in dry weather, torn open and left exposed in wet weather,—all by the agency of the same apparatus, the various effects resulting from the hygrometric property of the outer case. And what end can the Almighty have had in view in bestowing the power of performing all these operations, a power amounting almost to an intelligence, on a thing so mean as this fungus, which might have lived and perished unnoticed, or been crushed into the earth by the foot of the heedless traveller?

I know not what *secret* ends He may in His wisdom have had in view; one I do know, for He has revealed it:—it is to teach us this oft-repeated truth, that, "If God so clothe the grass of the field, which to-day is, and

to-morrow is cast into the oven, how much more shall He clothe you, O ye of little faith!" If the senseless mushroom can read us this lesson, surely it was not created in vain!

We have been too much occupied hitherto to take any notice of the feathered tribes, many of whom might tell us, if they could speak, that there are creatures in the world more sorely pinched by frost and hunger than ourselves. The countries where they have spent their summer are all uncheered by such bright days as this. With us, even in the severest winter, Nature occasionally has her languid faculties revived by a burst of sunshine, not less grateful than a shower in August. But what would be said of the naturalist who would venture abroad during the unyielding frost of a Russian or Norwegian winter, when even the birds have deserted the white wilder-

ness, and months must elapse before even a sprinkling of green can gladden the weary eye. Poor voiceless songsters! It has been a hard time with you even here. Yonder little tree-creepers are much better off than most of their neighbours. Their winter's food consists of small beetles and other insects which have ensconced themselves beneath the lichens and in the rugged bark of trees. The cold weather appears to have made them sociable, for we can catch a glimpse of several at work in the same tree. It is wise of them to hunt together, (not that I would venture to say that they are really actuated by any such motive,) for they may thus assure themselves that no one of them is exploring a tree which has just been despoiled by another. They always hunt up the tree, creeping about from side to side, and peering most inquisitively

into every inviting crack and cranny. What they find they very soon dispose of; but perhaps many of the holes they peep into have no tenants, and probably they swallow one prize while they are searching for the next. When they arrive near the top of the tree, they never hunt down again, but fly to the bottom of another branch.

The larger birds do not find it so easy to provide themselves with a meal. There was scarcely any blossom on the hawthorn last spring, and now not a haw is left; though the trees are sometimes, when the winter has been very mild, decked until the return of May. The hollies, too, which last winter had their dark foliage relieved by countless clusters of coral berries, are as thickly loaded as ever with leaves, it is true, but not a berry is to be seen. There is, however, already, great promise for

next year; this twig is covered with flower-buds, and nearly every tree is equally prophetic of plenty. Mistletoe does not grow in this

HOLLY BERRIES—WINTER OF 1845-6.

HOLLY IN BUD—WINTER OF 1846-7.

neighbourhood, and ivy-berries are not yet ripe. The mountain-ash was tolerably well supplied with berries, but the gales at the autumnal equinox tore them all from the tree, at a season when birds had abundance of other food. The privet bore plenty of berries; but these have all disappeared, either they have been destroyed by the weather, or devoured. Country people say that an unusual abundance of berries is a sure indication of a coming hard winter; and, on the other hand, when there are few berries, they say that the winter will be a mild one; not that there is any necessary connexion between cold and berries; but, they say, when the cold is to be so severe that the birds will be prevented from obtaining a sufficiency of their usual food, Providence supplies the deficiency by an abundant produce of berries; but when the winter is to be a mild one they

will not be needed, and therefore the trees bear but few. Now whether this opinion be generally correct, I do not know; I do not see why it should not, and yet that there should be exceptions. As I have said before, God wraps up the future in mystery, yet not without giving signs by which man may be assured of His constant superintendence and direction. I do not, therefore, look on this opinion as in any degree *superstitious;* it may be *incorrect* or otherwise; but at all events it implies that those who hold it are deeply impressed with the belief that the control of the seasons is in the hands of the Almighty alone, and that He provides for the sustenance of the least important of His creatures. "Not a sparrow falleth to the ground without our Heavenly Father."

It might be worth the while of those who

have the opportunity of living in the country, and who spend much of their time in the open air, especially such as are connected with agricultural pursuits, if they were to observe regularly for a series of years, and to make notes of, every plant which in the early part of the year showed symptoms of unusual vigour or the reverse. As the season advanced they might observe what flowers were most abundant and luxuriant, and also what crops were most productive, both in summer and autumn. From the examination of notes of this kind, made for a long course of years, it is possible that valuable hints might be gathered as to the probability that certain crops would be very productive the same year that some particular herb or tree was remarkably vigorous or early, or the reverse. And again, if it were found from observation that any particular autumnal

crop had always been defective whenever a certain plant failed to open its flowers in the usual season, the husbandman might take warning, and devote his ground to some other crop for that year. If it were found that no probable conclusion could be formed, but that sometimes certain phenomena had been observed and been followed by certain results, but that at other times directly the reverse was the case; still no harm would have been done; one can scarcely say even that time would have been misspent, when employed in endeavouring to do good, though with a barren result.

The only places to which blackbirds and thrushes can now resort for a hardly earned yet scanty meal, are the south sides of hedges and walls, mossy banks in woods and sheltered valleys. An old wall built of loose stones

entertains plenty of hungry visitors. Such a one we passed just now, and as we came near, several blackbirds hastily stole away over the opposite hedge, intending, no doubt, to wait there until we had passed by and left the coast clear, and then to return to their meal. In such places the common snail[1] takes up his winter quarters, and being unable, on account of his size, to penetrate far into the crevices, is obliged to rest content with going in as far as he can. Here he glues himself fast to a stone or to one of his companions who has been beforehand with him, leaving only a very small breathing hole between his shell and the substance to which it is attached, and spends the winter more idly even than he did the summer. It is well for him that his shell is so hard, and that he had the wisdom to make himself fast

[1] Helix aspersa.

before he began his winter nap. Blackbirds have very hard beaks, and hunger sharpens them, so that, in spite of every precaution, many a poor snail is awakened from his comfortable sleep by finding himself rudely dashed against the stepping stone of a stile,[1] where he is soon unmercifully picked to pieces and devoured. I remarked a number of broken shells scattered about as we passed by.

In the sheltered parts of woods, mossy banks are rifled by them in search of beetles, chrysalids, and small snails. Here and there the path is covered with loose moss from

[1] In Cornwall, church-paths across the fields are interrupted, wherever a hedge occurs, by stiles made of long blocks of stone, usually granite, which abounds in the county. These bars are either laid parallel to one another in a trench prepared for their reception, or the central ones are raised. In either case cattle are afraid or unable to cross them.

the banks. Furze-brakes are diligently explored, for under these thick bushes there is no snow and but little frost, so that they have no difficulty in prosecuting their search for insects; and here, even if they find but poor fare, they are at least sheltered from cold. A small flat snail with a transparent shell[1] is very fond of the crimson fungus which we saw just now. When touched it emits a powerful scent of garlick, but I should scarcely think that even this would prove a sufficient protection against a hungry bird. Another small snail, with a cylindrical tapering shell,[2] chooses the same fare. Neither of these finds any safety in its minuteness.

During the week that the ground was covered with snow, flocks of birds resorted to gardens and cabbage fields, where they did an

[1] Helix alliaria. [2] Clausilia rugosa.

immensity of mischief. In some places, every tender leaf that was left visible was destroyed. Winter lettuces had scarcely a particle left; cabbages and brocoli were pecked so unmercifully that only the stout mid-rib of the leaf was left untouched.

One of the greatest sufferers from famine has been the redwing. This bird visits us in October; and during the earlier part of its sojourn, has no difficulty in finding a sufficient quantity of snails and worms for its sustenance. But at the approach of frost, the former of these, as we have seen, take refuge in secret crannies, the latter retire to so great a depth in the ground, as to be out of reach both of frost and birds. Then the poor redwing must content himself with very scanty fare; he searches in the cracks of walls for small snails, or scratches up the

moss on banks in quest of beetles and the minute shells above mentioned. On these he contrives to make a few frugal meals, and manages to live out a frost, if it be only of a few days' continuance. But he soon loses his plumpness, and with it his strength of wing. If the frost and snow lie long on the ground, he is deprived even of these resources, he becomes the easy prey of the hawk, or the idle school-boy; or if he escapes these persecutors, flutters to the shelter of some bank or thicket, to die of cold and hunger. The birds of this species, which outlive the cold, remain in this country until May; then, it is said, they fly to the south of Europe, where they remain but a short time; resorting in the summer months to Norway, where they breed. No contrast can be greater than that afforded by the summer

and winter life of this bird. With us, it is a silent, melancholy starveling: in the north, a melodious, spirited songster, pouring forth, whether by night or day, a flood of loud and wild song; and this, not here and there only, but throughout the boundless forests, and the thousand vales of Norway, it has gained for itself the name of the nightingale of the country. In appearance it resembles the thrush, being best distinguished from that bird by a patch of dull red under each wing, from which it derives its name.

By country people in the west of England, it is best known by the name of *windle*, or *winnard*,[1] a word which has become proverbially emblematic of poverty and starvation.

[1] People say, "As poor as a winnard," when speaking of any one who is starved and thin; *poor* having this meaning in Devon and Cornwall.

And no wonder; for short as our walk has been, we have already seen the bones and feathers of three lying by the road-side. Those that die in this way are preyed upon by stoats and other vermin, and probably not a few fall victims to the voracious appetites of these active but mischievous little animals, even before the cold has done its worst with them.

But not land birds only thus suffer from the inclemency of the weather. On the first of January I was walking round the coast near Torquay, and observed an immense flock of sea-gulls hovering about a field in which a man was at work, and seemingly deterred only by his presence from alighting. On inquiring what could be the reason of their thus congregating, I was told, that, some weeks before, there had been a very large

catch of sprats in the neighbourhood, and that those which had not been used as food had been thrown over the field for manure. Gulls feed usually on small fish which swim near the surface of the sea.[1] These probably had been driven by the cold into deep water, and the birds, not being divers, were unable to follow them, and so were obliged to satisfy the cravings of hunger with whatever they could find on shore. A friend told me, a day or two since, that near the Lizard a large number of gulls had been observed congre-

[1] In those parts of Cornwall where the pilchard fishery is extensively pursued, the refuse fish are commonly used as manure; and, when this is the case, it is not unusual for gulls to travel inland for some miles, in large flocks, for the sake of feeding in the fields over which the fish have been spread. The pilchard is an oily fish, of a very powerful odour, which it disperses to such a distance, that, after a good catch, a fishing village may be scented, even by the human nostrils, for more than a mile.

gated round the carcase of a horse, and seemed well pleased with their unusual food. Some ornithologists deny that birds have the power of scenting their food: be this as it may, sea-gulls have remarkably quick sight, and can discover from a great distance when one of their own kind is feeding, so that when a single one has fallen in with a booty, he soon has plenty of messmates.

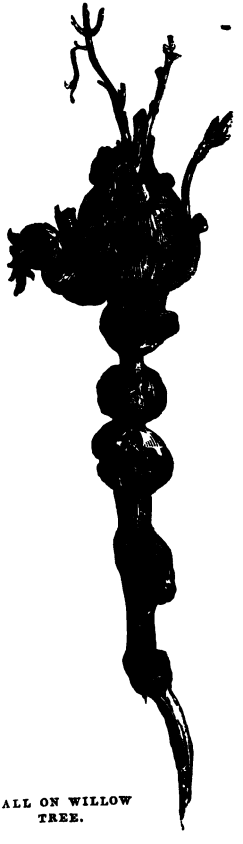
And now, as we return homewards, let us inspect somewhat more closely the banks and hedges which in the early part of our walk we were too cold to stop and examine. The cornel,[1] with its crimson twigs, is now one of the most conspicuous of hedge shrubs, but it has little else remarkable about it at present. In summer its leaves and tender shoots are

[1] Cornus sanguinea.

well worth examining, for the sake of seeing the numerous spiral vessels by which they are traversed. Then there is the wayfaring tree,[1] easily detected by its mealy branches, and the odd, button-like buds at the extremity of its shoots. This has not at any time much to recommend it but its pretty name. Traveller's joy[2] has a name yet prettier, and an appearance at all seasons more attractive. Its feathered seeds have withstood both wind and frost, and look like locks of wool scattered over the hedges. They must be very unsavoury as food, for yonder hungry chaffinch, rather than have recourse to them, prefers to dine off the shrivelled hips of the dog-rose. He well deserves his name, for a more chaffy banquet than the inside of a hip there can scarcely be. The willow bushes (they can

[1] Viburnum Lantana. [2] Clematis vitalba.

scarcely be called trees) which line this hedge are infested with a strange excrescence, evidently the work of an insect.[1] While the twig was in an active state of growth, a fly must have pierced it and deposited its eggs beneath the bark. In obedience to some unexplained law, the ascending sap was intercepted in its course, and hardened into this corky substance. The twigs above the gall, you see, are all dead. Within, we shall find a number of small



GALL ON WILLOW TREE.

[1] Probably some species of *Cynips*.

white grubs, which, when their appointed time comes, will eat through the walls of their winter's dwelling, and emerge as flies. Yonder straggling plant, with its long wiry stems beset here and there with a few glossy rigid leaves, is the madder,[1] not the species which is used as a dye,[2] but one nearly allied to it. It has availed itself of the friendly assistance of any kind neighbour that would serve its turn, and has contrived to overtop many a stouter plant than itself. A month since it was well stocked with black berries, about the size of currants, but these have now been either nipped by the frost, or devoured. Besides the plants which we have met with to-day, there are several others growing within a few miles of us which are still conspicuous for their berries. A

[1] Rubia peregrina. [2] Rubia tinctorum.

PRIVET, TRAVELLER'S JOY, ROAST-BEEF PLANT, BUTCHER'S BROOM, HIP OF THE WILD ROSE.

species of Iris,[1] which in early summer bears dull, bluish-purple flowers, is not uncommon in Devon and Cornwall. Sir W. J. Hooker says it is called *Roast-beef plant*, from a fancied resemblance between the smell of the plant and that savoury dish. I have never myself, however, been reduced to such a state of hunger as to detect the resemblance. The leaves are so intensely acrid, that the merest taste is sufficient to produce a burning heat in the mouth, which lasts for many hours. The seed-vessel, when ripe, opens with three valves, each shaped like a boat, and containing a number of scarlet seeds nearly as large as peas. I once tasted a leaf of the plant, not knowing its properties, and the effect was such that I have never felt any inclination to try the same experiment on the seeds; but as

[1] Iris fœtidissima.

the latter remain attached to the plant all the winter, the probability is that they are unpalatable even to a starving redwing. The butcher's broom, or knee-holly,[1] grows in a ravine running down to the sea, within a few miles of us. It is remarkable for its rigid leaves, rather larger than those of box, each of which is terminated by a sharp spine. The flowers grow singly from the centre of the leaves; they are green, tinged with purple, and, owing to their small size, inconspicuous, but are succeeded by large scarlet berries, which remain on the plant until March. The colour of these last two is particularly brilliant and attractive, and as the butcher's broom is an evergreen, its glossy seed-vessels, as large as cherries, are set off to great advantage by the dark bluish-green of the foliage.

[1] Ruscus aculeatus.

You might perhaps be inclined to say of all these seeds and berries, that they are the produce of the past year; the various shrubs and herbs on which they grow attained their perfection in the autumn; all that yet remains on the stoutest of them is but a wreck of their summer glory, and only retained on the stem by the last effort of exhausted Nature. Now this is by no means the case. As well might we say that God's providential care watches over us only while we are encompassed by the dangers of youth, while the faculties of our bodies and minds are expanding; but that when these are declining into old age His watchful care is withdrawn. This you know is not the case. It would be impious to suppose that our Heavenly Father neglects His creatures during any period of their existence, whether it be man, the noblest

of them all, or the tiny moss that man treads under his feet. The bud swells, the flower expands—it is He who "causeth the grass to grow." The sap stagnates, "the grass withereth, the flower fadeth: because the Spirit of the Lord bloweth upon it." And indeed, if we reflect on the matter, we cannot fail to see, that it must require as great an effort (humanly speaking) to arrest the flow of sap, and at the same time to sustain the life of the plant, as it did to excite the juices to motion. Sever a twig of holly, or butcher's broom, and lay it by for a few days; when you examine it again, you will find the leaves distorted, the berries shrivelled. Why? Because you have interrupted that process by which the God of Nature had ordained the life of the plant to be sustained until it was His will that it should resume its active growth.

It is quite a mistake to suppose that nature is in a condition of torpor during winter, that trees and herbs, from the time they shed their leaves until they resume them, are merely in a passive state of being. They appear to us indeed under altered circumstances, stripped of all outward signs of vegetation; but we must not thence infer that winter interrupts the course of God's Providence, palsying the vital energies of the tree, and consigning it, for a period, to a state of utter inactivity. No, the operations of nature, widely different though they may be from those which were carried on in summer, are still being conducted by their Great Author, secretly but effectually, enabling every tree and herb to prosecute that stage in its existence which it is at this season destined to perform.

Look at yonder ivy, crowning with its

perpetual verdure the rude structure erected by our forefathers, in days of less lofty scientific pretensions than our own, but perhaps of deeper and more genuine piety.[1] Is nature slumbering there? You may call the ivy a gloomy plant if you will, for choosing to grow round crumbling ruins and decaying trees. To me it conveys no such idea. It flourishes away, to tell

[1] See Frontispiece.

us, if we will listen to its teaching, (and the lesson is one which we may learn from every one of God's creatures,) that all the phenomena

FLOWER AND BERRIES OF IVY.

of nature are commissioned only to fulfil His word. Of the ivy's year, this is the midsummer. During the summer of other trees it was busily occupied in lengthening its shoots, clasping tightly with its younger branches the rough stone wall, lest the winter blast should tear it from its support, and sending its matured limbs freely into the air. Amid the chill fogs of November it shot forth its honied flowers to lengthen the existence of many a stinted insect.[1] All the winter it has been vigorous and healthy, blighted by no

[1] Two of the largest and most beautiful of the British Butterflies, the Painted Lady (*Cynthia cardui*), and Red Admiral (*Vanessa Atalanta*), may very generally be observed feeding on the honey contained in the blossoms of ivy in this month. Many of these survive the winter, and re-appear in the sunny days of March, to be the parents of future colonies. I have observed the Red Admiral so late in the season as the 24th of December. [The

wind, nipped by no frost; for however severe the winter may be, ivy berries are never

BERRIES OF IVY.

frozen. The middle of February is its harvest-time: in open situations it ripens its berries

The day was remarkably bright and warm, which accounted for the appearance of the insect at so unusual a season.

yet earlier. Many bunches have been already plucked and carried off by the birds, and the niche inside the well is covered with the shells of berries and seeds, and little tufts of stems from which berries have been plucked.

The chaste "snow-drop, venturous harbinger of spring," belongs to winter scarcely less than the more robust ivy. Summer is with it a period of uninterrupted seclusion; buried in the parched ground it retains within its bulb the stock of nourishment necessary to its future development, and when the time arrives for its appearing above the ground, let the earth be frozen ever so hard, its tender leaves make for themselves a ready passage, and forth it comes to fulfil its mission.

> "Hemmed in with snows, and white as they,
> But hardier far,"

it is furnished with a secret armour of defence, proof against the keenest arrows of winter, and is ripening its seeds in the warm suns of April, before the rose has thought of expanding its earliest buds. In a wood near us, which abounds with these elegant flowers, I was standing one bright morning, this winter, (January 29th,) wondering on what the power of resisting the cold possessed by so frail a creature could depend, when I heard, or fancied I heard, the hum of a bee.

SNOWDROP.

Much to my astonishment I found I was not deceived; for on searching about, I discovered two real honey-bees, with their thighs heavily laden, flying about from flower to flower, and as busily engaged as if their season of toil had commenced in right earnest. Such a combination of the emblems of summer and winter I had never witnessed before, and I need scarcely say, that the sight supplied me with food for meditation during the remainder of my walk.

I might point out to you many other plants, which are either taught to prolong their existence late into winter, or to vegetate so early in the year, that they might with propriety be called "winter nurslings." I prefer, however, to draw your attention to some of those which unquestionably belong to summer; but which present evident tokens that our Heavenly

Father careth for them even at this ungenial season, and is even now preparing them for their future destiny.

> "He marks the bounds which winter may not pass,
> And blunts his pointed fury; in its case,
> Russet and rude, folds up the tender germ,
> Uninjured, with inimitable art;
> And ere one flowery season fades and dies
> Designs the blooming wonders of the next."
>
> *Cowper.*

The hazel[1] you will, no doubt, expect me to name among the first, for its young catkins, destined to expand in the following year, are conspicuous before the November storms have bared the tree of its foliage. They have now increased materially in size, and in a few weeks will be in full perfection. In every hedge and waste place you will discover shoots of nettle,[2] already armed at all points with an

[1] Corylus Avellana. [2] Urtica urens and U. dioica.

array of weapons, offensive and defensive, and making great efforts to penetrate the thicket of brambles which surround it, before the foliage of the latter shall have blocked up the way. Near it the humble chickweed[1] is making haste to begin its long summer; for though early in the field, it means to continue flowering and shedding its seed almost until it is time for it to begin its year again. The cuckoo-pint[2] began to break the ground in the beginning of January. Even thus early its singular flower was perfectly formed, though yet buried several inches in the earth. Before the tips of its leaves have appeared above the surface you may, by digging in a spot where you have seen it growing in the previous year, discover its delicate yellow shoots; and if you carefully unroll the leaves of which they are

[1] Stellaria media. [2] Arum maculatum.

STITCHWORT, CUCKOO-PINT, HAZEL, BEECH, WOODBINE, NETTLE, CHICKWEED.

composed, you will find, curiously wrapped up in them, with the leaf-stalks for swaddling-clothes, the infant which was intended, had you not torn it from its cradle, to take its place among the "Lords and Ladies" of summer.[1] Be not disappointed, however, if you are unsuccessful in your first or second search, for every shoot does not produce a flower. The thickest stems are the most likely to reward your search. The woodbine,[2] as it continues to bear flowers later in the year than any other shrub, (perfect flowers and ripe berries are not unfrequent on the same branch in October,) so it is the first to expand its leaves. They were ready to greet the venturesome naturalist on New-year's day. At the same time the stitchwort,[3] with its straggling and seemingly lifeless stems, was

[1] See "Botanical Rambles," (page 77, square edition.)
[2] Lonicera Periclymenum. [3] Stellaria Holosteum.

beginning to send out from among the dry withered leaves with which it was here and there beset, the most brilliant tufts of new foliage. The forest-trees are as yet untinged with verdure; but, nevertheless, not even in them is animation suspended. Winter is with them neither a death nor a forgetting. Mysterious operations have been going on in the secret laboratory of nature, which may be traced by their effects, though we are unable to detect the method. The tree threw off its leaves; the sap apparently stagnated; yet the buds have increased considerably in bulk since last autumn, and every twig is as really alive now as it was when loaded with flowers and foliage. But all outward indication of life is wanting; whatever operations are going on are internal, concealed behind a bulwark of senseless bark; even new organs have been provided,

bud-scales, to defend from cold the points at which vegetation is destined to be continued in the ensuing spring; and vitality, though not suspended, has been so reduced that not a leaf shall burst through its integuments until its Creator shall have empowered the sun to bathe it with just so much heat and light as shall be essential to its perfect development. The heedless passenger, who at this season breaks off a twig from a beech or other tree, is little aware of the fact that he holds in his hand a leafy branch; and that each of the brown points with which it is furnished is in itself a perfect piece of mechanism, concealing a gem of exquisite workmanship, which it would defy the proudest effort of human skill to imitate. Each bud is composed of from twenty to thirty elastic scales, the outer ones being very small, and protecting only the bases

of the inner, but increasing in size, step by step, until a single scale embraces nearly the whole of the bud. Of these larger scales there are several layers, and if they be removed, a minute branch is discovered, of a delicate green colour, and furnished with two rows of plaited leaves thickly covered with a glossy silk, which outvies the richest satin. Yet though the whole was contained in a case less than half an inch long and the eighth of an inch in diameter, not a particle of the silk will he find disarranged, nor a single leaf to have been so placed as to touch another.

The same exquisite symmetry, evidence of the same perfect adaptation of means to a certain intended effect, is to be seen in every one of the millions of buds, which are destined shortly to clothe our woods with flowers and foliage. We little heed them; yet God careth

for them all; nor do they less glorify Him at this season (when we are unthankfully complaining of chill and damp) than when their duty will be to bask by day in His sunshine, and to drink in His refreshing dews by night: we, too, *then* may be persuaded by the glad face which nature will wear, to add our voices to the universal chorus of thanksgiving. But if the bud which we have severed from the parent tree, has served to remind us that the wintry storms and mists with which it pleases God at times to shroud our year of existence, are mercifully sent to us, in order that the yet more mysterious operations of His Holy Spirit may be carried on within our hearts,—then let us believe that although the twig will wither and die without fulfilling its promise, it has at least fulfilled one commission, that, namely, of impressing on our minds a holy

truth. "Wherefore, if God so clothe the grass of the field, which to-day is, and to-morrow is cast into the oven, how much more shall he clothe you, O ye of little faith?" For, "Christ is nearer to thee than he is to all those things that thou seest about thee; for He made them to glorify Him, but thee He made to know Him, and be like Him."

FINIS.

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